Draft Existing Use Determination and Rationale:

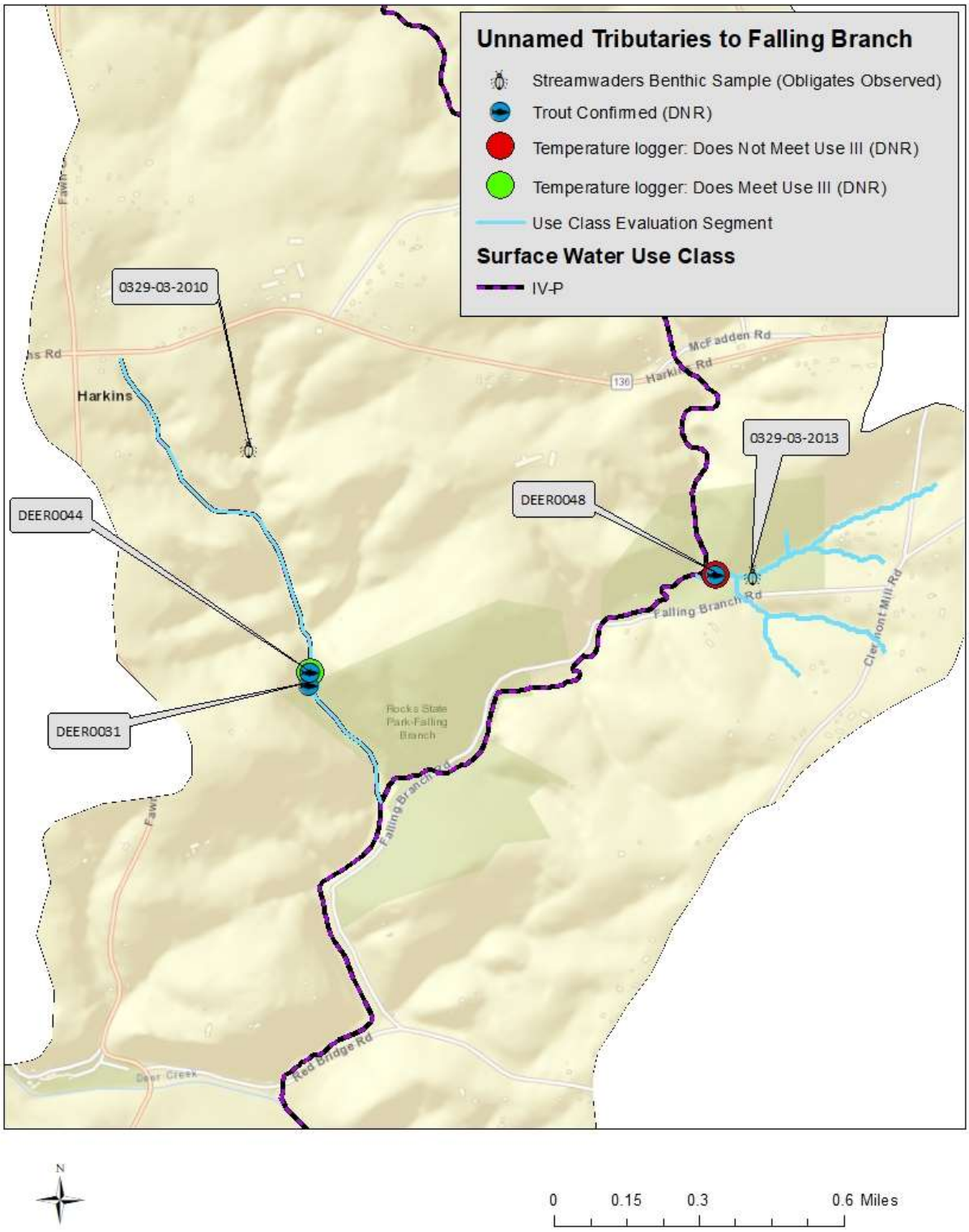
Unnamed Tributary to Falling Branch (Harford County)

August 17, 2020

Description of Setting and Data Sources

Two unnamed tributaries to Falling Branch (12-digit 021202020329) in the Deer Creek watershed, located northwest of Bel Air in Harford County, are currently designated as Use Class IV-P. The waterbody segments currently support brook trout and brown trout and cold water benthic invertebrates. Furthermore, a tiger trout (a sterile intergeneric hybrid of a brook and brown trout) was collected in 2018. The MDDNR Fisheries Program conducted surveys in 2018 and 2019, and also deployed a temperature logger in 2018. Stream Waders volunteers conducted a survey of this waterbody segment in 2010. MDDNR fisheries stocks rainbow trout in a section of the mainstem of Deer Creek located near the use class evaluation segment. Figure 1 shows the location and sampling stations of the waterbody being evaluated. Figure 2 shows the location of the rainbow trout stocking. The western and eastern unnamed tributaries are considered separately. Water temperature logger and biological data results are presented in Tables 1, 2, 3 and 4.

Figure 1: Western and Eastern Unnamed Tributaries To Falling Branch



Western Unnamed Tributary to Falling Branch Existing Use Determination

Temperature Data for Western Unnamed Tributary to Falling Branch

Water temperature data were collected during 1 sampling event in 2018. The water temperature data meet the Class III-P criterion.

Table 1. Unnamed Tributary to Falling Branch Temperature Logger Data

Date	Station ID	Stream	Data Submitter	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2018	DEER0044	UT to Falling Branch	MDDNR Fisheries Program	4536	4%	0%	17.60	22.60

The "Daily Max" represents the maximum temperature from June 30th to August 31st.

Biological Data for Western Unnamed Tributary to Falling Branch

The unnamed tributary to Falling Branch stream evaluation segment was surveyed in 2018 and 2019 (Level 3 data). One adult and one young of the year of brown trout, one adult brook trout, and one adult tiger trout were found in 2018. The MDDNR Fisheries Program did not attempt to collect coldwater obligate benthic macroinvertebrate species. The 2019 sample yielded multiple year classes of brown trout and one brook trout. A nearby 2019 fisheries sample taken at the DEER0048 station is also provided for context. At this station multiple year classes of adult and young-of-year brown trout were observed.

There was one MDDNR Stream Waders sampling event (Level 2 data) that occurred in 2010, but where not identified down to genus. When this sample was reexamined by Trout Unlimited in 2018, *Sweltsa* and *Tallaperla* were confirmed.

Table 2. Unnamed Tributary to Falling Branch Biological Data

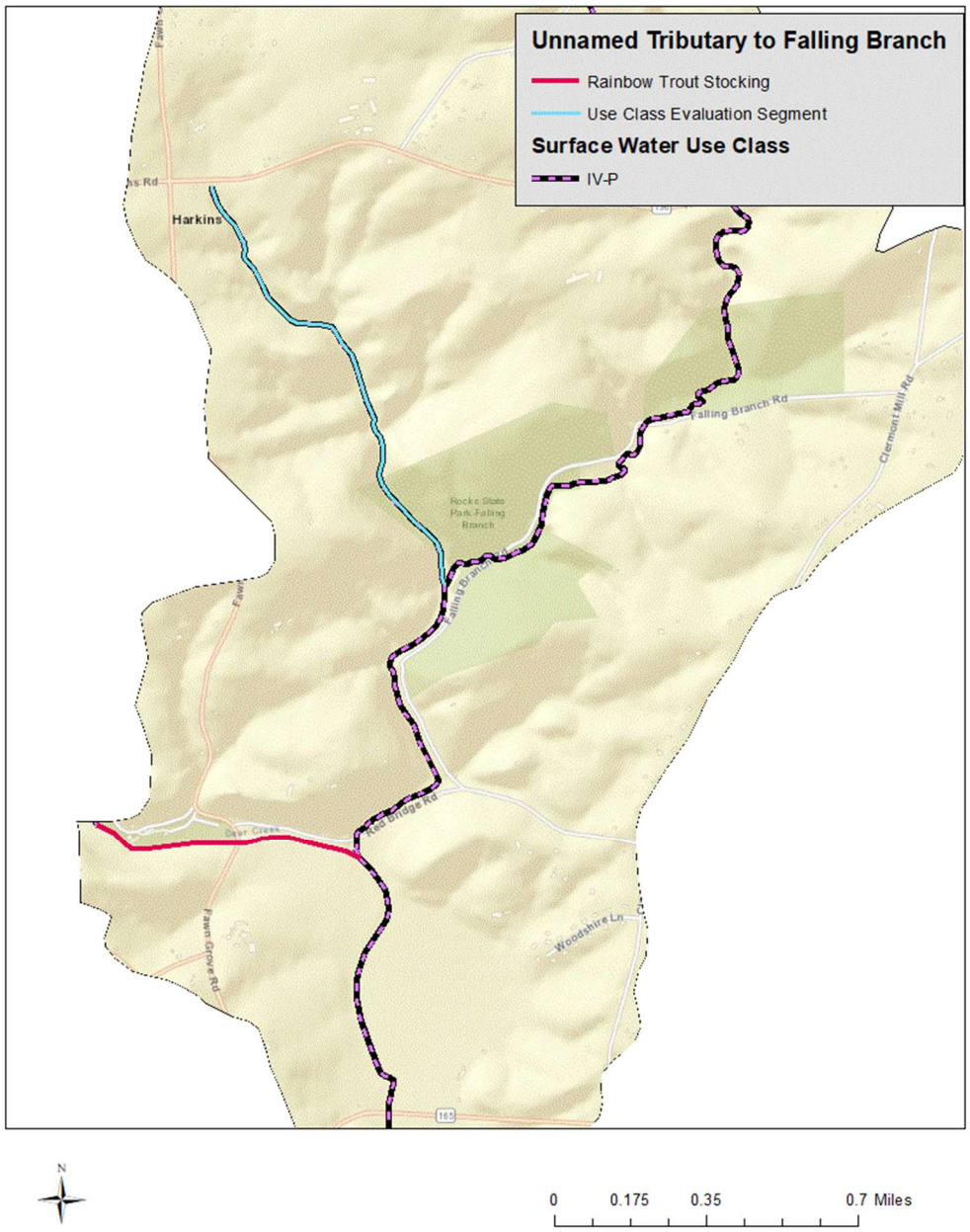
Date	Station ID	Stream	Data Submitter	Species	Count	Maturity
6/29/2018	DEER0044	UT to Falling Branch	MDDNR Fisheries Program	brook trout	1	Adult
				brown trout	2	Adult & YOY
				tiger trout	1	Adult
2019	DEER0031	UT to Falling Branch	MDDNR Fisheries Program	brook trout	1	Adult
				brown trout	8	Multiple year classes of adult
2019	DEER0048	UT to Falling Branch (stream segment not shown on map)	MDDNR Fisheries Program	brown trout	24	Multiple year classes of adult and YOY
4/11/2010	0329-03-2010	UT to Falling Branch	MDDNR Stream Waders	*Sweltsa* and *Tallaperla*	Present	-

YOY - young-of-year

DNR Fish Stocking

The Maryland Department of Natural Resources recently stocked 500 rainbow trout in a section of the mainstem of Deer Creek located near the use class evaluation segment. Brown trout have not been stocked in Falling Branch or Deer Creek in over 15 years. Figure 2 shows the location of the rainbow trout stocking.

Figure 2



Existing Use Determination and Rationale for Western Unnamed Tributary to Falling Branch

Current Use Class: Class IV-P

Existing Use Determination: The unnamed tributary to Falling Branch, from its confluence with Falling Branch [39.683601 ºN, -76.439217 ºW] upstream to and including all headwaters,

supports naturalized self-sustaining brown trout and is used by brook trout, with water temperatures that have a 90th percentile below 20°C, an average daily mean below 20°C, and daily max below 24°C.

Is this Existing Use Determination Consistent with the Current (March 2020) Designated Use Class? **No.** The existing use of this unnamed tributary to Falling Branch, as described above, requires that water temperatures remain significantly colder than the water quality criterion established to protect the current use class (Class IV-P) designation. As a result, the existing use of this unnamed tributary to Falling Branch requires protections to maintain the cold water temperatures currently found in this tributary and different than those afforded by the current use class designation of IV-P.

Changes Proposed to the Currently Designated Use Class: The Department recommends that this western unnamed tributary to Falling Branch upstream of the confluence with Falling Branch located at [39.683601 N°, -76.439217 W°] be redesignated to Class III-P. Figure 3 shows the extent of the Designated Use Class Change.

Rationale for the Existing Use Determination: This unnamed tributary to Falling Branch upstream of the confluence with Falling Branch demonstrated attainment of the Use Class III-P temperature criterion at the DEER0044 station. The biological data have demonstrated the existence of naturalized self-sustaining brown trout and possibly brook trout. Although rainbow trout have been stocked in nearby surface waters, no brown trout have been recently stocked.

Eastern Unnamed Tributary to Falling Branch Existing Use Determination

Temperature Data for Eastern Unnamed Tributary to Falling Branch

Water temperature data were collected during 1 sampling event in 2020. The water temperature data do not meet the Class III-P criterion.

Table 1. Unnamed Tributary to Falling Branch Temperature Logger Data

Date	Station ID	Stream	Data Submitter	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2020	DEER0048	UT to Falling Branch	MDDNR Fisheries Program	6624	61%	2%	20.32	25.5

The "Daily Max" represents the maximum temperature from June 30th to August 31st.

Biological Data for Eastern Unnamed Tributary to Falling Branch

The eastern unnamed tributary to Falling Branch stream evaluation segment was surveyed in 2019 (Level 3 data). Multiple year classes and young of year brown trout were observed. The MDDNR Fisheries Program did not attempt to collect coldwater obligate benthic macroinvertebrate species.

There was one MDDNR Stream Waders sampling event (Level 2 data) that occurred in 2013. Trout Unlimited reexamined the 2013 sample and discovered that the sample contained at least one *Tallaperla*.

Table 2. Unnamed Tributary to Falling Branch Biological Data

Date	Station ID	Stream	Data Submitter	Species	Count	Maturity
2019	DEER0048	UT to Falling Branch	MDDNR Fisheries Program	brown trout	24	Multiple year classes of adult and YOY
4/11/2013	0329-03-2013	UT to Falling Branch	Trout Unlimited/MDDNR Stream Waders	*Tallaperla*	present	-

YOY - young-of-year

DNR Fish Stocking

The Maryland Department of Natural Resources recently stocked 500 rainbow trout in a section of the mainstem of Deer Creek located near the use class evaluation segment. Brown trout have not been stocked in Falling Branch or Deer Creek in over 15 years. Figure 2 shows the location of the rainbow trout stocking.

Existing Use Determination and Rationale for Eastern Unnamed Tributary to Falling Branch

Current Use Class: Class IV-P

Existing Use Determination: The unnamed tributary to Falling Branch, from its confluence with Falling Branch [39.690484 ºN, -76.426324 ºW] upstream to a confluence with another stream [39.69109 ºN, -76.422514 ºW], supports naturalized self-sustaining brown trout, and has an average daily mean temperature below 20.4°C, a daily maximum of less than 25.6°C, stays below 20°C for at least 60% of the time and stays below 24°C for at least 90% of the time.

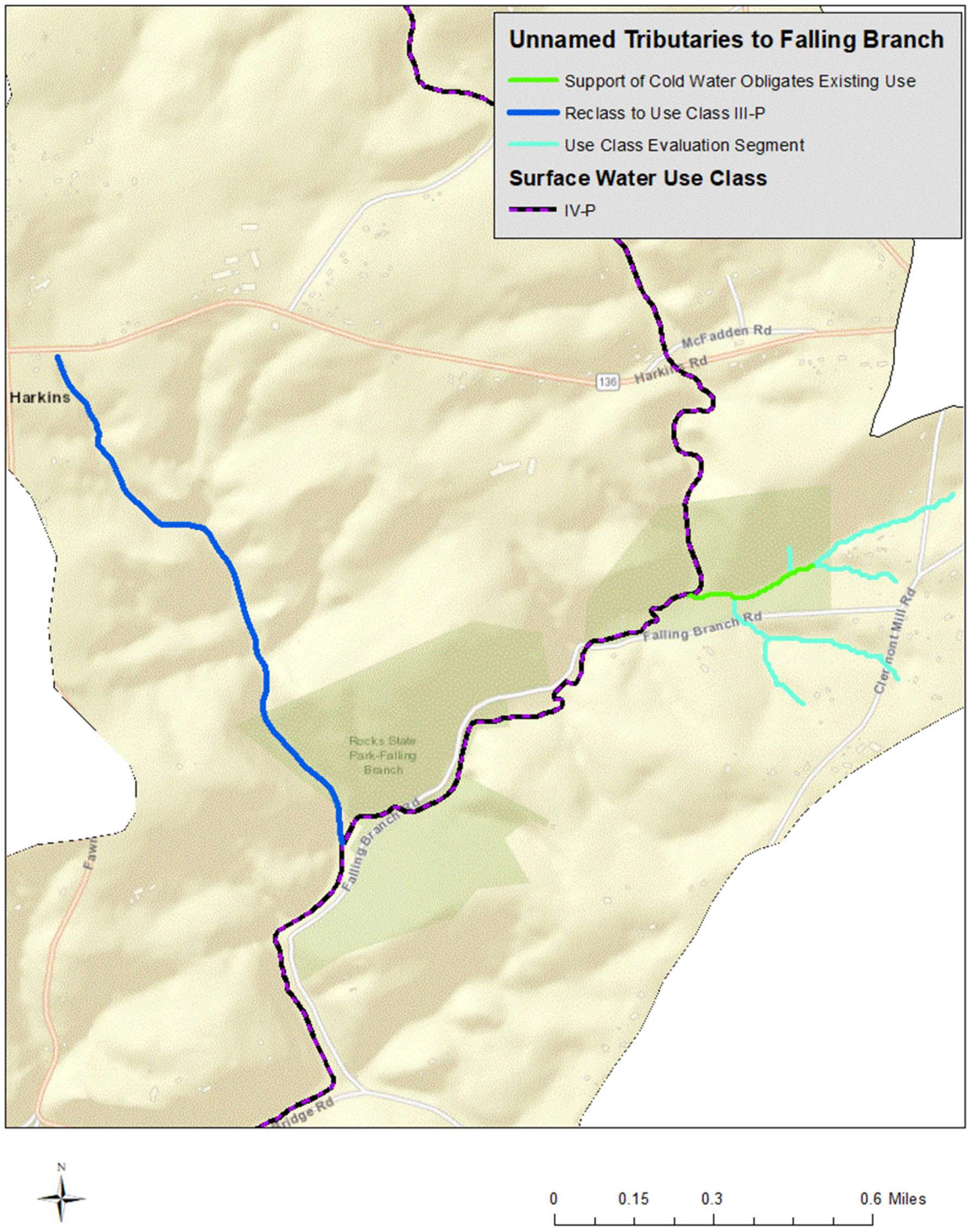
Is this Existing Use Determination Consistent with the Current (March 2020) Designated Use Class? **No.** The existing use of this unnamed tributary to Falling Branch, as described above,

requires that water temperatures remain significantly colder than the water quality criterion established to protect the current use class (Class IV-P) designation. As a result, the existing use of this unnamed tributary to Falling Branch requires protections to maintain the cold water temperatures currently found in this tributary and different than those afforded by the current use class designation of IV-P.

Changes Proposed to the Currently Designated Use Class: Though it is clear that the designated use class of this unnamed tributary should be revised to reflect and be protective of the existing use, a self-sustaining brown trout stream, current temperature data do not support the re-designation of this unnamed tributary to Class III-P without conducting a use attainability analysis (UAA). Since Maryland is in the process of redefining Class IV (or IV-P) and potentially developing a new 'cool water' use class as part of the work of the Cold Water Advisory Committee, it is not prudent to redesignate this unnamed tributary at this time. Instead, and until Maryland conducts either a UAA or establishes new definitions for Class IV and a cool water use class, MDE will formally recognize this unnamed tributary as having an existing use that is different than its current designated use class.

Rationale for the Existing Use Determination: The DEER0048 sampling station is located near the confluence with Falling Branch and demonstrated that brown trout utilize at least the downstream section of this tributary. The presence of cold water obligates was confirmed slightly upstream of the DEER0048, and there are no barriers to trout movement up to the confluence located at [39.69109 ºN, -76.422514 ºW]. Beyond this confluence the stream buffer is reduced significantly. Therefore, the support of cold water obligate existing use will extend to this confluence but not beyond it. Figure 3 shows the extend of the existing use change.

Figure 3


Unnamed Tributaries to Falling Branch
Support of Cold Water Obligates Existing Use
Reclass to Use Class III-P
Use Class Evaluation Segment
Surface Water Use Class
IV-P
Harkins
McFadden Rd
136
Falling Branch Rd
Clermont Mill Rd
Rocks State Park-Falling Branch
N
0
0.15
0.3
0.6 Miles